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Patent Claims

1. A lens arrangement for the particle-optical imaging of an object (23), to be imaged and positionable in an object area (27), into an image area (31), comprising:

   a first focusing lens device (55) for providing a field having a focusing effect on the imaging particles for imaging the object (23) from the object area (27) into an intermediate image area (59),

   a second focusing lens device (57) for providing a further field having a focusing effect on the imaging particles for imaging the object (23), which has been imaged into the intermediate image area (59), into the image area (31), and

   a deflection lens device (63) for providing a field having a deflecting effect on the imaging particles in a region of the intermediate image area (59).

2. The lens arrangement according to claim 1, wherein the field of the first or/and the second focusing lens device (55) comprises a magnetic or/and electric field which is substantially axially symmetric in respect of a central beam of a bundle of beams (73).

3. The lens arrangement according to claim 1, wherein the field of the first or/and the second focusing lens device comprises two magnetic or/and electric dipole or/and quadrupole field arrangements which are axially spaced apart from one another in respect of a central beam of a bundle of beams of the imaging particles.

4. The lens arrangement according to one of claims 1 to 3, wherein the field of the deflection lens device (63) comprises a magnetic field which is substantially mirror-symmetric in respect of a plane jointly extending with a central beam of a bundle of beams of the imaging particles.

5. The lens arrangement according to one of claims 1 to 4, wherein the field of the deflection lens device (63) comprises a magnetic or/and electric dipole field which is oriented transverse to a central beam of a bundle of beams of the imaging particles.

6. The lens arrangement according to one of claims 1 to 5, wherein an aperture stop (61) is provided in a diffraction plane (61) of the first focusing lens device (55) or/and the second focusing lens device (57).

7. The lens arrangement according to one of claims 1 to 6, further comprising a first driving means for the deflection lens device (63) for adjusting a strength of the deflecting field thereof, and a second driving means for the first focusing lens device (55) or/and the second focusing lens device (57) for adjusting a strength of the focusing fields thereof, wherein the first driving means changes the field strength of the deflection lens device (63) substantially proportionally dependent upon an external magnitude (M) and the second driving means changes the field strength of the first focusing lens device (55) and the second focusing lens device (57), respectively, substantially quadratically dependent upon the external magnitude (M).

8. The lens arrangement according to claim 7, wherein the lens arrangement (29) is provided for imaging a subfield

(T) of the object area (27) which is spaced apart from the optical axis (41) of the lens arrangement (29) by a variable distance (M) onto the image area (31), and wherein the external magnitude comprises the distance (M) of the subfield (T) from the optical axis (41).

9. The lens arrangement according to claim 8, wherein the field of the deflection device (63) deflects pairs of different beams of the particle beams (73, 75) imaging the subfield (T) at substantially equal angles á.

10. The lens arrangement according to claim 8 or 9, further comprising an illumination device (35, 37, 39, 43, 45) for illuminating merely the subfield (T) of the object area (27) and a third driving means (47, 49) for the illumination device for driving the illumination device in order for the distance (M) of the illuminated subfield (T) from the optical axis (41) to be changed.

11. The lens arrangement according to one of claims 8 to 10, wherein the image area (31) and the object area (27) each have a predetermined nominal shape, wherein the second driving means changes the strength of the deflecting field of the first and the second focusing device, respectively, such that a central region of the subfield (T) is imaged substantially sharply onto the image area, and wherein the first driving means changes the strength of the deflecting field of the deflection lens device such that the peripheral regions of the subfield are also imaged substantially sharply onto the image area.

12. The lens arrangement of claim 11, wherein the shape of the object area is that of a plane.

13. Method for device manufacture, comprising at least one photolithographic step, wherein the photolithographic step comprises the transfer of a pattern defined by a mask (23) to a particle-sensitive substrate (25) by means of the lens arrangement (29) according to one of claims 1 to 12, wherein the mask (23) is disposed in the object area (27) and the substrate (25) is disposed in the image area (31).